



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

SN

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,487	04/24/2001	Po-An Sung	Sung 2 (58650)	4522
30593	7590	04/05/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			WANG, TED M	
P.O. BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	
			2634	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/841,487

Applicant(s)

SUNG, PO-AN

Examiner

Ted M Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, filed on 11/3/2004, regarding to claims 1-15, have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicants' arguments but firmly believes that the cited reference to reasonably and properly meet the claimed limitations.

#### Claims 1-15

##### *(1) Applicants' argument –*

"the claims recite estimating the Doppler change in frequency of the communications signal using the common pilot channel and removing the Doppler change in frequency of the same communications signal in the dedicated physical channel. Instead Nakano teaches estimating the Doppler shift amount of each multiple wave of despread pilot signals, passing only the frequency components of the estimated Doppler shift of the despread pilot signals through a filter, and using those pilot signals to correct the phase shift of the despread data signals. Nakano assumes that pilot signals sampled and estimated at a first point in time can be applied to subsequent data signals (see, e.g., paragraphs 37-45 and 75-85)."

##### *Examiner's response –*

In response to applicant's argument that the cited patent Nakano (EP 0898379 A2) does not teach or suggest the limitation of claim 1 "estimating the Doppler change in frequency of the communications signal using the common pilot channel and removing the Doppler change in frequency of the same communications signal in

the dedicated physical channel", Nakano discloses a Doppler shift estimating section (Fig.6 element 402) and Doppler shift component filtering section (Fig.6 element 403) to estimate the Doppler shift in frequency (paragraphs 75, 76, 78, and 80-85). In paragraphs 75, 78, 81 repeatedly stated that Doppler shift component filtering section 403 allows only a specified frequency area of the despread pilot signals to pass on the basis of the estimation result of the Doppler shift estimating section 402 and Doppler shift estimating section 402 estimates the Doppler shift amount corresponding to each multiple wave on the basis of spectra of these pilot signals. Clearly, Nakano's patent discloses the limitation of estimating the Doppler change in frequency.

Note that, the Doppler shift is the frequency shift experienced by the radio signal when the mobile terminal is in motion. By estimating a Doppler shift, it means estimate a frequency shift caused by the Doppler effect.

With regard to the limitation of "removing the Doppler change in frequency", Nakano discloses a coherent detection section 405 that correct or remove the Doppler shift effect with the estimated Doppler shift result of Doppler shift estimating section 402 and Doppler shift component filtering section by correcting the phase shift of the despread data signal. Again, the Doppler shift is the frequency shift experienced by the radio signal when the mobile terminal is in motion. By correcting or removing the estimated Doppler shift, it means to correct or remove the estimated frequency shift caused by the Doppler effect from the input communication signal.

Finally, with regard to the limitation of "removing the Doppler change in frequency of the same communications signal in the dedicated physical channel", Nakano further

discloses a wireless communication apparatus (Fig.6 elements 401-405), receiving a communication signal that it is despread by the pilot despreading section 401 with spread codes for pilot channel and estimated by the Doppler shift, and the same signals (paragraph 77 line 3) are despread by the data despreading section 404 with spread codes for data channel, and the despread data signals are detected and corrected by the coherent detecting section 405.

Thus, for the explanation addressed in the above paragraph, the rejection under 35 U.S.C. 102(b) with Nakano's reference is adequate.

2. Applicant's arguments, filed on 11/3/2004, with respect to the rejection(s) of claim(s) 16-22 under 35 USC § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of US 5,007,068.

#### ***Claim Objections***

3. Claim 20 is objected to because of the following informalities:
- In claim 20, line 3, change 'a' to – an --.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 21 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

Art Unit: 2634

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- With regard claim 21, the limitation of “each sample and delay circuit further comprises a phase shifter” as recited has not been taught in the specification and drawing. The specification and drawing only teaches “Each I and Q Doppler estimation channel also includes an integrator 44, a sample circuit 46, and a delay circuit 48, including a phase shifter 50 and multiplier and add/sum circuit 52” as recited in page 6 lines 30-33 and Fig.1A, 1B, and 3B elements 46, 48, 50, and 52.
- With regard claim 22, the limitation of “each sample and delay circuit further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel” as recited has not been taught in the specification and drawing. The specification and drawing only teaches “Each I and Q Doppler estimation channel also includes an integrator 44, a sample circuit 46, and a delay circuit 48, including a phase shifter 50 and multiplier and add/sum circuit 52” as recited in page 6 lines 30-33 and Fig.1A, 1B, and 3B elements 46, 48, 50, and 52.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 1-15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakano (EP 0,898,379 A2).

- In regard claim 1, Nakano, cited by the instant applicant, discloses a wireless communication apparatus and wireless communication method receiving within a communications receiver a spread spectrum communications signal (Fig.1 elements 6-8) having a dedicated physical channel (Fig.6 elements 404 and 405) and common pilot channel (Fig.6 elements 401-403 and 405); estimating the Doppler change in frequency using the common pilot channel (Fig.6 elements 402 and 403); and removing the Doppler change in frequency within the dedicated physical channel using the estimated Doppler change in frequency (Fig.6 element 405 and page 7 line 36 – page 8 line 25).
- In regard claim 2, Nakano further discloses the limitation of receiving the spread spectrum communications signal within a rake receiver (Fig.1 elements 5-8 and Fig.6 elements 401-405, page 2 lines 25-57, page 4 lines 3-7, and page 7 line 36 – page 8 line 25).
- In regard claim 3, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 4, Nakano further discloses the limitation of multiplying a channelization code into respective In-phase (I) and Quadrature (Q) channels, summing over a symbol period, and sampling to obtain respective I and Q sampled values (page 3 lines 13-55, page 5 lines 19-35, page 6 lines 2-28, page 6 line 54 – page 7 line 32, and page 7 line 58 – page 8 line 25).
- In regard claim 5, Nakano further discloses the limitation of phase shifting and taking an arctangent of I and Q sampled values to estimate the Doppler frequency shift (page 7 lines 1-32).

- In regard claim 6, Nakano further discloses the limitation of estimating sine and cosine values of the estimated Doppler frequency shift to be multiplied within the dedicated physical channel (page 3 lines 13-55, page 5 lines 19-35, page 6 lines 2-28, page 6 line 54 – page 7 line 32, and page 7 line 58 – page 8 line 25).
- In regard claim 7, Nakano further discloses the limitation of splitting the dedicated physical channel into I and Q data channels that receive an estimated Doppler change in frequency (page 7 line 36 – page 8 line 25).
- In regard claim 8, Nakano further discloses the limitation of estimating the Doppler change in frequency within respective I and Q Doppler estimation channels (page 7 line 36 – page 8 line 25).
- In regard claim 9, all limitation is contained in claims 2 and 6. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 10, all limitation is contained in claims 9 and 4. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 11, all limitation is contained in claims 9 and 5. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 12, all limitation is contained in claims 9 and 6. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 13, all limitation is contained in claims 9 and 7. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 14, all limitation is contained in claims 9 and 8. The explanation of all the limitation is already addressed in the above paragraph.



- In regard claim 15, which is a receiver claim related to claim 9, all limitation is contained in claims 9. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 19, which is a receiver claim related to claim 4, all limitation is contained in claims 4. The explanation of all the limitation is already addressed in the above paragraph.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (EP 0,898,379 A2) in view of Simon et al. (US 5,007,068).

- In regard claim 20, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit.

However, Simon et al. teaches each I and Q Doppler estimation channel comprises an integrator (Fig.4 elements 412 and 413 LPFs, which inherently have a integrator function) and sample (Fig.4 elements 53, 54, 81, and 82) and delay circuit (Fig.4 elements 31, 32, 93, and 94).

It is desirable that each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit in order to remove the Doppler effect (column 2 lines 42-52). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit, into Nakano's Doppler estimation circuit so as to remove the Doppler effect.

- In regard claim 21, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel further comprises a phase shifter.

However, Simon et al. teaches each I and Q Doppler estimation channel further comprises a shifter (Fig.4 elements 110 and 115).

It is desirable that each I and Q Doppler estimation channel further comprises a phase shifter in order to improve the Doppler estimation operation (column 7 lines 55-59). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel further comprises a shifter, into Nakano's Doppler estimation circuit so as to improve the Doppler estimation operation.

- In regard claim 22, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel.

However, Simon et al. teaches each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel (Fig.4 elements 111 and 116).

It is desirable that each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel in order to remove the Doppler effect (column 6 lines 39-67).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel, into Nakano's Doppler estimation circuit so as to remove the Doppler effect.

#### ***Allowable Subject Matter***

10. Claims 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang



**SHUWANG LIU**  
**PRIMARY EXAMINER**